Integration of UAS into the National Airspace System: View from the Airline Flight Deck

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ALPA

UAS Integration Into NAS: Overview

- Why is ALPA interested?
- New Concept
- Issues
- Challenges

Why is ALPA Interested?

- 56,000+ members flying for 41 airlines US and Canadian airlines
- Schedule with Safety
- "Playing by the Rules"

New Concept

- Next Big Thing
- NAS Target Level of Safety must be achieved
- Potential to introduce unacceptable risks

Issues

- UAS Pilot
- Aircraft
- Operator (Owner) Certification
- NAS Integration
- Security

Pilot Qualifications

- Well-trained and well-qualified pilot is the most important safety component of the commercial aviation system
- Single aircraft operations
- Pilot licensing and qualification commensurate with type of operations and airspace flown
- Minimize changes to FAR requirements

Pilot Duties

- Meets 14 CFR 91.3a
  - "The pilot in command (PIC) of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft"
  - Responsible for meeting FAR / operational requirements, e.g. flight time/duty time, fatigue awareness, etc.
  - One pilot always designated as PIC
    - Physically in Ground Control Station
    - Phase of flight (takeoff, cruise, landing)
    - Time period (long duration flights)

Aircraft - Airworthiness

- 14 CFR 91.7a – Civil Aircraft Airworthiness
  - "No person may operate a civil aircraft unless it is in an airworthy condition"
- UAS Aircraft not in 14 CFR 23 and 25
- FAA Order 8130.34, Airworthiness Certification of Unmanned Aircraft Systems
- Wake turbulence and weather phenomena
- "Failure to Anticipate Failure Modes""
- Robust software

Aircraft - Equipage

- Must meet 14 CFR 91
  - Equipment
  - Instruments
- Exceptions
  - Oxygen equipment
  - Seatbelts
- Standardization
  - Flight controls
  - Displays

Aircraft - Certification

- Formal certification process
- N-number for specific aircraft
- Certification process dependent on:
  - Size
  - Weight
  - Speed
  - Authorized use

Sense and Avoid

- 14 CFR 91.113b
  - "… vigilance shall be **maintained by each person** operating an aircraft so as to see and avoid other aircraft"
- Vigilance
  - Two-way street
- Technology could evolve to manned aircraft
- Until then, carry TCAS detectable transponder

Operator (Owner) Certification

- Operator certification required for commercial operations
  - Certificate for Public Convenience and Necessity
  - Requires new FAR or 14 CFR 91 Subpart
- Responsible for:
  - Training
  - Operations
  - Maintenance
  - Security
  - Flight time/ Duty Time

Seamless Integration

- "Do No Harm"
  - Nick Sabatini to RTCA SC-203
- Follow the established rules
  - Operation
  - Right of way
  - Flight planning
- Exceptions
  - Limited and codified

ATC

- Same ATC interaction
  - Transparency
  - Common expectations
  - Common procedures

Airspace

- Adhere to same rules in all classes of airspace

ATC Communications

- No landline communications
  - Hardship for ATC
  - Lack of “party line”
- Unicom/CTAF at uncontrolled airports
- Latency

Security

- Background screening of pilots and crewmembers
- Secure Ground Control Stations like airline flight decks
- Control link security

Challenges

- Safety and security paramount
  - Accelerated rate of development and use
  - Planned UAS significantly advanced in size and operational capabilities

ALPA will continue participation in industry and FAA efforts to develop and implement the new rules, regulations, security measures, and procedures necessary to safely accommodate UAS operations (civil or military) into the NAS

ALPA UAS Policy, adopted by ALPA Executive Board on May 24, 2007